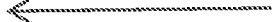


TITLE: Purification and properties of L-asparaginase
 asparaginase produced by *Aspergillus niger*, S-48
 TAT, the causal fungus of
 biodeterioration inside Tut
 Ankhamen Tomb (TAT)
 AUTHOR(S): Louboudy, S. S. 
 CORPORATE SOURCE: Bot. & Microbiol, Dept., Fac. of Sci.,
 Al-Azhar Univ.,
 Cairo, Egypt.
 SOURCE: Egyptian Journal of Biotechnology, (1998)
 Vol. 4, pp. 110-123.
 CODEN: EJBIF7. ISSN: 1110-6093.
 COUNTRY: EGYPT
 DOCUMENT TYPE: Journal
 FILE SEGMENT: CAPLUS
 OTHER SOURCE: CAPLUS 1999:649978
 LANGUAGE: English
 ENTRY DATE: Entered STN: 16 Nov 2001
 Last Updated on STN: 9 May 2002
 AB The purification and properties of L-asparaginase (I)
 produced by A.
 niger S-48 TAT, the causal factor of biodeterioration
 inside the
 Pharaoh Tutankhamen tomb (TAT), is reported. The
 purification procedure
 involved cell-free filtrate preparation (specific
 activity of 8.92 U/mg
 protein/mL), fractional precipitation with (NH₄)₂SO₄,
 (specific activity of 21.05
 U/mg protein/mL corresponding to a 2.35-fold
 purification), dialysis against
 distilled water followed by dialysis against sucrose
 crystals, (specific
 activity of 36.92 U/mg protein/mL, corresponding to a
 5.7-fold purification)
 and finally applying a column of Sephadex G-100 (specific
 activity of 61.0
 U/mg protein/mL corresponding to a 6.83-fold
 purification). The regulatory
 role of different buffers applied at different pH values
 revealed that
 purified I exhibited a maximum specific activity of 62.8
 U/mg protein/mL in
 the presence of citrate-phosphate buffer pH 6.6, followed
 by citrate
 buffer pH 6.0 (specific activity of 55.46 U/mg
 protein/mL) and then
 Tris-HCl buffer pH 7.4 which revealed an obvious decrease
 in the specific
 activity (34.16 U/mg protein/mL). By testing purified I

in the presence

of different substrates, it was found that the highest activity was

obtained by using the most preferable one, i.e., L-asparagine, followed by

L-aspartic acid, L-glutamine, and L-glutamic acid, whereas L-arginine,

L-ornithine, L-threonine and L-citrulline showed negligible or inhibitory

effects toward the purified enzyme activity. Moreover, the application of

different heavy metal cations (in the form of chloride salts in addition to

KCN) as activators and/or inhibitors indicated that CaCl_2 , NH_4Cl , BaCl_2 ,

and MnCl_2 promoted I activity, whereas AlCl_3 , KCN, NiCl_2 , ZnCl_2 , FeCl_2 ,

and MgCl_2 had deleterious effects on enzyme activity.

Purified I was

tested at different incubation temps., and showed obvious activity within

the temperature range of 22.5-45° with a maximum at 30°.